

What is claimed is:

1 1) A method of measuring at least one parameter associated with a portion of a sample  
2 having formed thereon one or more structures with at least two zones each having an  
3 associated zone reflectance property, the method comprising the steps of:  
4 a) illuminating the at least two zones with light that is partially coherent and  
5 partially incoherent;  
6 b) detecting reflected and scattered light from the at least two zones;  
7 c) inferring at least one zone reflectance property from the detected light; and  
8 d) fitting a parametric model to the at least one measured zone reflectance property,  
9 wherein said parametric model accounts for an interaction between light  
10 emanating from the two zones.

1 2) A method according to claim 1, wherein the at least one reflectance property of light  
2 includes the reflected intensity of unpolarized light or polarized light.

1 3) A method according to claim 1, wherein the at least one reflectance property of light  
2 includes a ratio corresponding to the reflection coefficients for parallel and  
3 perpendicularly polarized light.

1 4) A method according to claim 1, wherein the at least one reflectance measurement  
2 takes place while the sample is in a process tool.

1 5) A method according to claim 1, wherein the at least one reflectance parameter is used  
2 to adjust the processing of a subsequent wafer.

1 6) A method according to claim 5, where the at least one reflectance parameter is used to  
2 adjust the subsequent processing of a subsequent sample on the subsequent wafer.

1 7) A method according to claim 1, wherein the at least two zones are aperiodic.